iUP-200A/iUP-201A UNIVERSAL PROM PROGRAMMERS

MAJOR iUP-200A/iUP-201A FEATURES:

- **Personality Module Plug-Ins Provide Industry First Support for Intel and Intel Compatible EPROMs, EEPROMs, KEPROM, Microcontrollers, and other Programmable Devices.**
- **Powerful PROM Programming Software (iPPS) Makes Programming Easy with Intellec® Development System, iNDS-II Networks, iPDS Personal Development System, IBM P/C, X/T, A/T, and PC DOS Compatibles.**
- **New Modules Provide Industry-Fastest, Intelligent Programming Algorithms to Dramatically Shorten Programming Times.**
- **iUP-200A Provides On-Line Operation with a Built-In Serial RS232 Interface and Software for a Growing List of Environments.**
- **iUP-201A Provides Same On-Line Performance and Adds Keyboard and Display for Stand-Alone Use.**
- **iUP-201A Stand-Alone Capability Includes Device Previewing, Editing, Duplication, and Download from any Source Over RS232C Port.**
- **Regular Updates and Add-Ons Have Maintained Even the Earliest iUP-200 and iUP-201 Users at the State-of-Art.**

The iUP-200A and iUP-201A universal programmers program and verify data in all the Intel and Intel compatible, programmable devices (EPROMs and EEPROMs). They can also program the EPROM memory portions of Intel's single-chip microcomputer and peripheral devices. The iUP-200A and iUP-201A universal programmers provide on-line programming and verification in a growing variety of development environments using the Intel PROM programming software (iPPS). In addition, the iUP-201A universal programmer supports off-line, stand-alone program editing, EPROM duplication, and EPROM memory locking. The iUP-200A universal programmer is expandable to an iUP-201A model.

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FUNCTIONAL DESCRIPTION

The iUP-200A universal programmer operates in on-line mode. The iUP-201A universal programmer operates in both on-line and off-line mode.

On-Line System Hardware

The iUP-200A and iUP-201A universal programmers are free-standing units that, when connected to a host computer with at least 64K bytes of memory, provide on-line EPROM programming and verification of Intel programmable devices. In addition, the universal programmer can read the contents of the ROM versions of these devices.

The universal programmer communicates with the host through a standard RS232C serial data link. Different versions of the iUP-200A and iUP-201A are equipped with different cables, including the cable most commonly used for interfacing to that host. Care should be taken that the version with the correct cable for your particular system is selected, as cable requirements can vary with your host configuration. A serial converter is needed when using the MDS 800 as a host system. (Serial converters are available from other manufacturers).

Each universal programmer contains the CPU, selectable power supply, static RAM, programmable timer, interface for personality modules, RS232C interface for the host system, and control firmware in EPROM. The iUP-201A also has a keyboard and display.

A personality module adapts the universal programmer to a family of EPROM devices; it contains all the hardware and firmware necessary to program either a family of Intel EPROMs or a single Intel device. The user inserts the personality module into the universal programmer front panel.

Figure 1 shows the iUP-200A on-line system configurations, and Figure 2 shows the on-line system data flow.

On-Line System Software

The iUP-200A and iUP201A includes your choice of one copy of Intel's PROM Programming software iPPS, selected from a growing list of versions for different operating systems and hosts. Each version includes the software implementation designed for that host and O.S. and the RS232C cable most commonly used. Additional versions may be purchased separately if you decide to change hosts at a later date. The iPPS software provides user control through an easy-to-use interactive interface. The iPPS software performs the following functions to make EPROM programming quick and easy:

- Reads EPROMs and ROMs
- Programs EPROMs directly or from a file
- Verifies EPROM data with buffer data
- Locks EPROM memory from unauthorized access (on devices which support this feature)
- Prints EPROM contents on the network or development system printer
- Performs interactive formatting operations such as interleaving, nibble swapping, bit reversal, and block moves
- Programs multiple EPROMs from the source file, prompting the user to insert new EPROMs
- Uses a buffer to change EPROM contents

All iPPS commands, as well as program address and data information, are entered through the host system ASCII keyboard and displayed on the system CRT. Table 1 summarizes the iPPS commands.

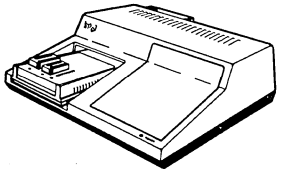
The iPPS software lets the user load programs into an EPROM from host system memory or directly from a disk file. Access to the disk lets the user create and manipulate data in a virtual buffer with an address range up to 16M. This large block of data can be formatted into different EPROM word sizes for program storage into several different EPROM types. In addition, a program stored in the target EPROM, the host system memory, or a system disk file can be interleaved with a second program and entered into a specific target EPROM or EPROMs.

The iPPS software supports data manipulation in any Intel format: 8080 hexadecimal ASCII, 8080 absolute object, 8086 hexadecimal ASCII, 8086 absolute object, and 80286 absolute object. Addresses and data can be displayed in binary, octal, decimal, or hexadecimal. The user can easily change default data formats as well as number bases.

The user invokes the iPPS software from the operating system. Intellec and iPDS Development Systems running ISIS allow running the software under control of ISIS submit files freeing the operator from repetitious command entry.

System Expansion

The iUP-200A universal programmer can be easily upgraded (by the user) to an iUP-201A universal programmer for off-line operation. The upgrade kit (iUP-PAK-A) is available from Intel or your local Intel distributor.



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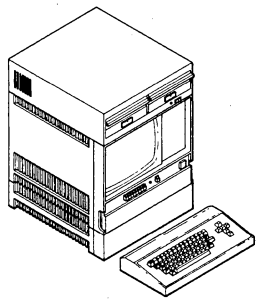
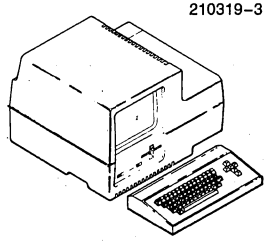
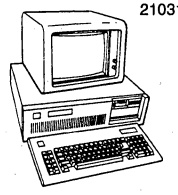
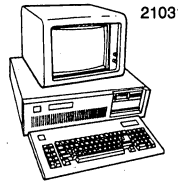
MODEL NUMBER	HOST SUPPORTED	S/W OPERATING SYSTEM ENVIRONMENT	RS232C CABLE INCLUDED*	I/O PORT USED
iUP200A211A OR iUP200A212B	 210319-3	ISIS II	INTELLEC-STYLE	CH1 OR 2
iUP200A213C	 210319-4	iNDX	INTELLEC-STYLE	CH1 OR 2
iUP200A216D	 210319-5	PC-DOS	PC OR XT STYLE	COM 1 OR 2
iUP200A217D	 210319-6	PC-DOC	PC AT STYLE	COM 1 OR 2

*RS232C CABLES: INTELLEC STYLE—DB 25 PIN MALE TO DB 25 PIN MALE, NULL MODEM CABLE.

PC XT STYLE — DB 25 PIN FEMALE TO DB 25 PIN MALE, NULL MODEM CABLE.

PC AT STYLE — DB 9 PIN FEMALE TO DB 25 PIN MALE CABLE.

Figure 1. On-Line System Configurations

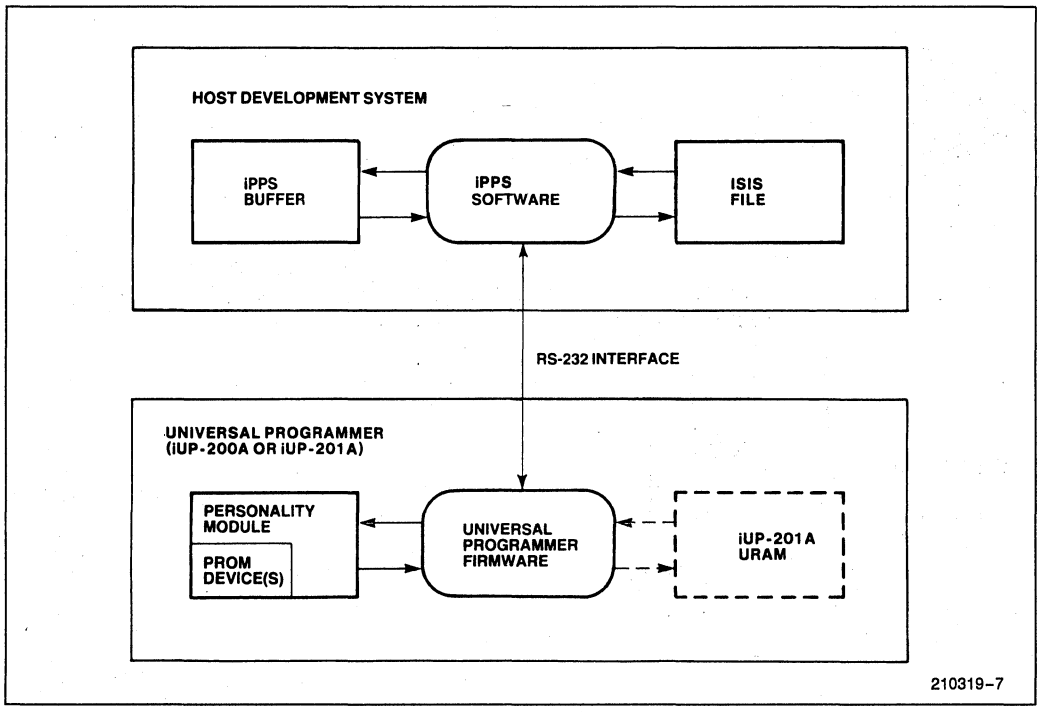


Figure 2. On-Line System Data Flow

Off-Line System

The iUP-201A universal programmer has all the on-line features of the iUP-200A universal programmer plus off-line editing, EPROM duplication, program verification, and locking of EPROM memory independent of the host system. The iUP-201A universal programmer also accepts Intel hexadecimal programs developed on non-Intel development systems. Just a few keystrokes download the program into the iUP RAM for editing and loading into a EPROM.

Off-line commands are entered using the off-line command keys summarized in Table 2.

In addition to the hardware components included as part of the iUP-200A, the iUP-201A contains a 24-character alphanumeric display, full hexadecimal 12-function keypad, and 32K bytes of iUP RAM. Figure 3 illustrates the iUP-201A keyboard and display.

The two logical devices accessible during off-line operation are the EPROM device and the iUP RAM. A typical operation is copying the data from an EPROM (or ROM) into the iUP RAM, modifying this data in iUP RAM, and programming the modified data back into a EPROM device. The address range of the iUP RAM is automatically determined by the universal programmer when EPROM type selection is made. Figure 4 shows the off-line system data flow.

SYSTEM DIAGNOSTICS

Both the iUP-200A and iUP-201A universal programmers include self-contained system diagnostics that verify system operation and aid the user in fault isolation. Diagnostics are performed on the power supply, CPU internal firmware ROM, internal RAM, timer, the iUP-201A keyboard, and the iUP RAM. In addition, tests are made on any personality module installed in the programmer the first time the module is accessed. The personality module tests include the power select circuitry and module firmware. Straightforward messages are provided on the development system display in on-line mode and on the iUP-201A display in off-line mode.

PERSONALITY MODULES

A personality module is the interface between the iUP-200A/iUP-201A universal programmer (or an iPDS system) and a selected EPROM (or ROM). Personality modules contain all the hardware and

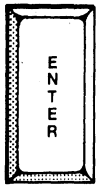
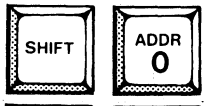
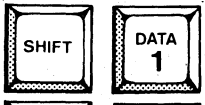
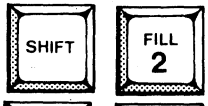
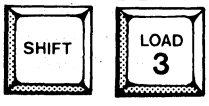
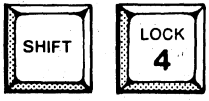
Table 1. iPPS Command Summary

Command	Description
PROGRAM CONTROL GROUP	CONTROLS EXECUTION OF THE iPPS SOFTWARE.
EXIT	Exits the iPPS software and returns control to the ISIS operating system.
<ESC>	Terminates the current command.
REPEAT	Repeats the previous command.
ALTER	Edits and re-executes the previous command.
UTILITY GROUP	DISPLAYS USER INFORMATION AND STATUS AND SETS DEFAULT VALUES.
DISPLAY	Displays EPROM, buffer, or file data on the console.
PRINT	Prints EPROM, buffer, or file data on the local printer.
QUEUE	Prints EPROM, buffer or file data on the network spooled printer.
HELP	Displays user assistance information.
MAP	Displays buffer structure and status.
BLANKCHECK	Checks for unprogrammed EPROMs.
OVERLAY	Checks whether non-blank EPROMs can be programmed.
TYPE	Selects the EPROM type.
INITIALIZE	Initializes the default number base and file type.
WORKFILES	Specifies the drive device for temporary work files.
BUFFER GROUP	EDITS, MODIFIES, AND VERIFIES DATA IN THE BUFFER.
SUBSTITUTE	Examines and modifies buffer data.
LOADDATA	Loads a section of the buffer with a constant.
VERIFY	Verifies data in the EPROM with buffer data.
FORMATTING GROUP	REARRANGES DATA FROM THE EPROM, BUFFER, OR FILE.
FORMAT	Formats and interleaves buffer, EPROM, or file data.
COPY GROUP	COPIES DATA FROM ONE DEVICE TO ANOTHER.
COPY (file to PROM)	Programs the EPROM with data in a file on disk.
COPY (PROM to file)	Saves EPROM data in a file on disk.
COPY (buffer to PROM)	Programs the EPROM with data from the buffer.
COPY (PROM to buffer)	Loads the buffer with data in the EPROM.
COPY (buffer to file)	Saves the contents of the buffer in a file on disk.
COPY (file to buffer)	Loads the buffer from a file on disk.
COPY (file to URAM)	Loads file data into the iUP RAM (iUP-201A model only).
COPY (URAM to file)	Saves iUP URAM data in a file on disk (iUP-201A model only).
COPY (buffer to URAM)	Loads the buffer into the iUP URAM (iUP-201A model only).
COPY (URAM to buffer)	Loads iUP URAM data into the buffer (iUP-201A model only).
SECURITY GROUP	LOCKS SELECTED DEVICES TO PREVENT UNAUTHORIZED ACCESS.
KEYLOCK	Locks the EPROM from unauthorized access.

firmware for reading and programming a family of Intel devices. Each personality module is a single molded unit inserted into the front panel of the universal programmer. A wide variety of personality modules and adaptors are available for Intel programmable devices. New modules and adaptors allow you to keep abreast of the newest Intel devices, programming algorithms, and device packages while protecting your equipment investment. Refer to the data sheet on "PROM Programming Personality Modules" for a complete list of available support.

Each personality module connects to the universal programmer through a 41-pin connector. Module firmware is uploaded into the iUP RAM and executed by the internal processor. The personality module firmware contains routines necessary to read and program a family of EPROMs. In addition, the personality module sends specific information about the selected EPROM to the universal programmer to help perform EPROM device integrity checks.

Table 2. Off-Line Command Keys Summary

Key	Function
	Selects either on-line or off-line operation. When on-line, all other function keys are disabled.
	Selects the EPROM type when using a personality module able to program multiple EPROM devices.
	Verifies the contents of the installed EPROM device with the contents of the iUP RAM. The universal programmer display indicates the address and the XOR of any mismatches.
	Performs a device blank check and then programs the target EPROM with data from the iUP RAM. If the blank check fails, pressing PROG again peforms an overlay check to verify that non-blank EPROMs can be programmed.
	Loads the iUP RAM with the data from the EPROM device installed in the personality module.
	Terminates the current off-line function, clears a user entry, or restores the display after an error.
	Transfers information from the universal programmer display (addresses, data, or baud rate) into the iUP RAM.
	Selects an address field for display.
	Selects a data field for keypad editing and entry.
	Loads a contiguous section of iUP RAM locations with a constant.
	Downloads Intel hexadecimal data from any development system which has an RS232C port.
	Locks a EPROM from unauthorized access.

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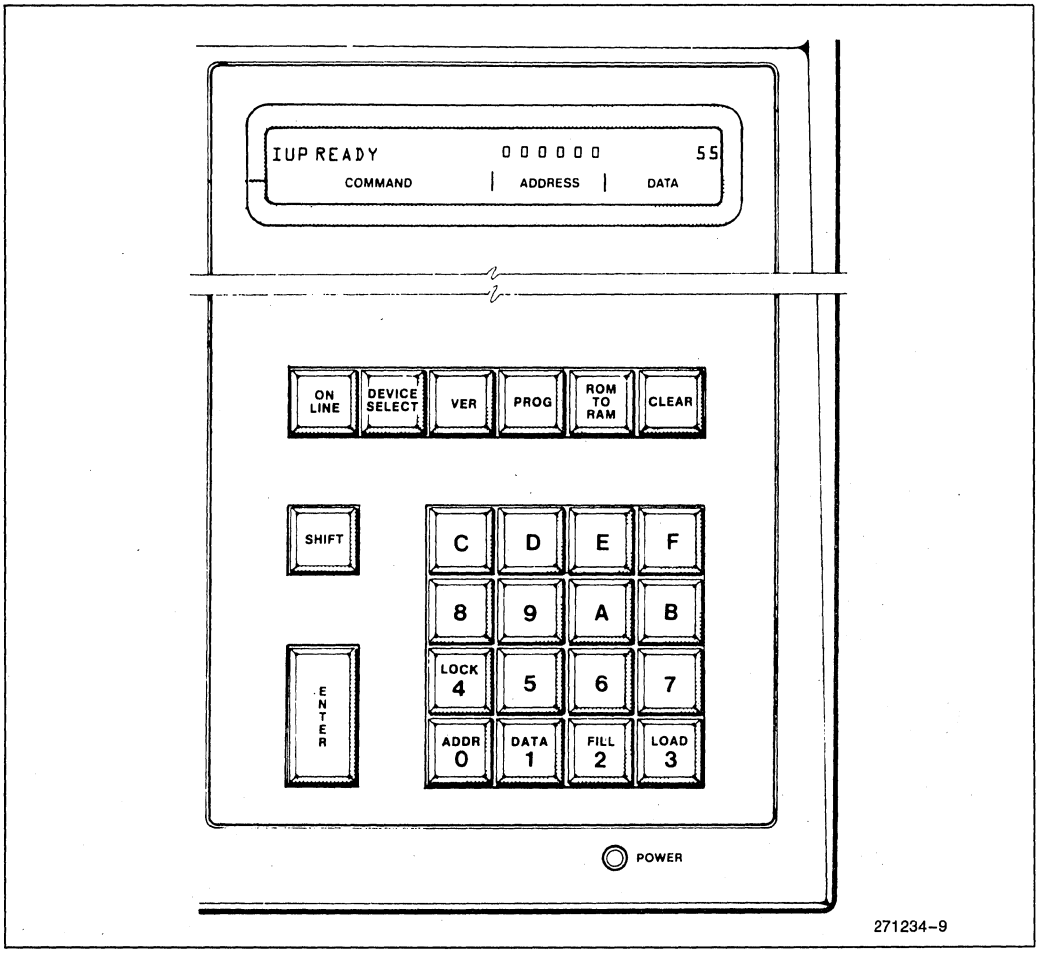

Figure 3. iUP-201A Keyboard and Display

LEDs on each personality module indicate operational status. On some personality modules a column of LEDs indicate which EPROM device type the user has selected. On some personality modules an LED below the socket indicates which socket is to be used. A red indicator light tells the user when power is being supplied to the selected device. Figure 5 shows a selection fo some of the personality modules supported on the universal programmer.

In addition to the testing done by the iUP system self-tests, each personality module contains diagnostic firmware that performs selected EPROM tests and indicates status. These tests are performed in both on-line and off-line modes. The EPROM installation test verifies that the device is installed in the module correctly and that the ZIF socket is closed. The EPROM blank check determines whether a device is blank. The universal programmer automatically determines whether the blank state is all zeros or all ones. The overlay check (performed when a EPROM is not blank) determines which bits are programmed, compares those bits against the program to be loaded, and allows programming to continue if they match. As with the system self-tests, straight-forward messages are provided. The user can invoke all of the EPROM device integrity checks except the installation test (which occurs automatically any time an operation is selected).

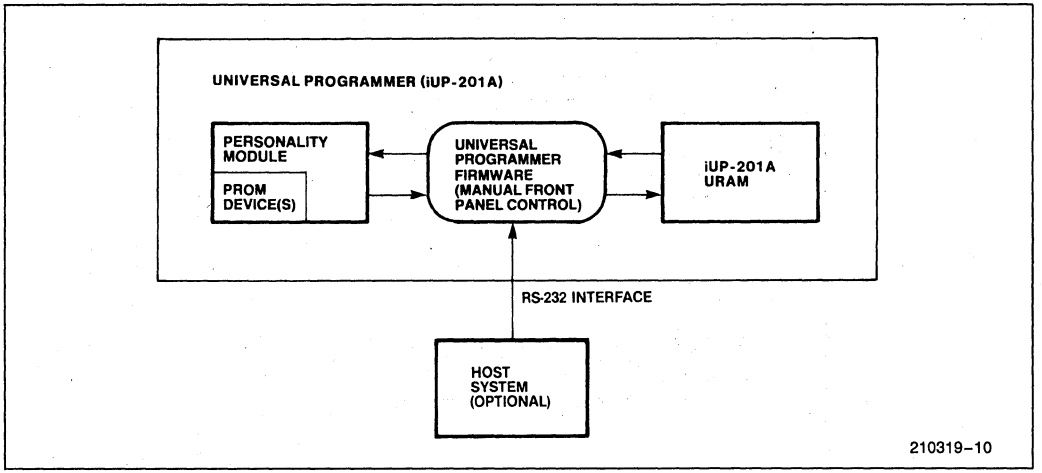

Figure 4. Off-Line System Data Flow

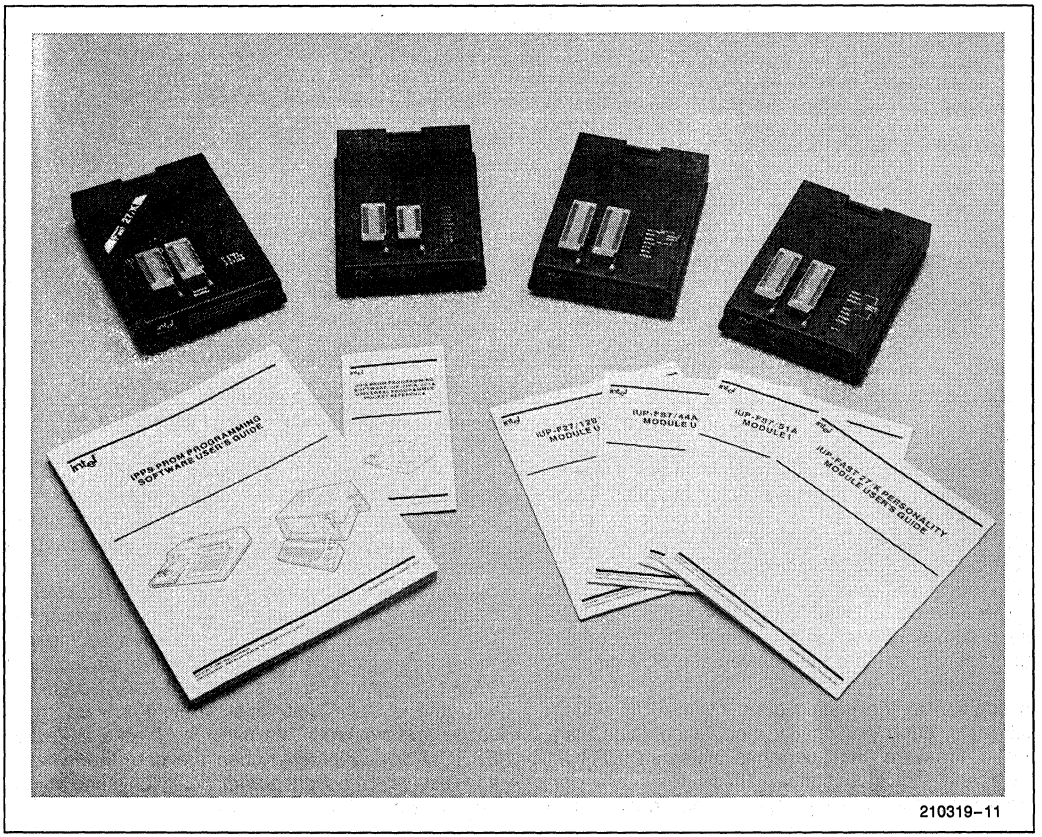

Figure 5. Personality Modules

iUP-200A/iUP201A SPECIFICATIONS

Control Processor

Intel 8085A microprocessor
6.144 MHz clock rate

Memory

RAM—4.3 bytes static
ROM—12K bytes EPROM

Interfaces

Keyboard: 16-character hexadecimal and 12-function keypad (iUP-201A model only)

Display: 24-character alphanumeric (iUP-201A model only)

Software

Monitor— system controller in pre-programmed EPROM

iPPS — Intel PROM programming software on supplied diskette

Physical Characteristics

Depth: 15 inches (38.1 cm)

Width: 15 inches (38.1 cm)

Height: 6 inches (15.2 cm)

Weight: 15 pounds (6.9 kg)

Electrical Characteristics

Selectable 100, 120, 200, or 240 Vac ± 10%; 50-60 Hz

Maximum power consumption—80 watts

Environmental Characteristics

Reading Temperature:	10°C to 40°C
Programming Temperature:	25°C ±5°
Operating Humidity:	10% to 85% relative humidity

Reference Material

166041-001— *iUP-200A/201A Universal Programmer User's Guide.*

166042-001— *Getting Started with the iUP-200A/201A (For ISIS/iNDX Users).*

166043-001— *Getting Started with the iUP-200A/201A (For DOS Users).*

164853 — *iUP-200A/201A Universal Programmer Pocket Reference.*

ORDERING INFORMATION

Product Order Code	Description
iUP-200A 211A	On-Line PROM programmer with iPPS rel 1.4 on Single density ISIS II floppy
iUP-200A 212B	On-Line PROM programmer with iPPS rel 1.4 on Double density ISIS II floppy
iUP-200A 213C	On-Line PROM programmer with iPPS rel 2.0 for Series IV, on mini-floppy
iUP-200A 216D	On-Line PROM programmer with iPPS rel 2.0 for PC/DOS, and cable for PC or XT
iUP-200A 217D	On-Line PROM programmer with iPPS rel 2.0 for PC/DOS, and cable for AT
iUP-201A 211A	Off-Line and on-line PROM programmer with iPPS rel 1.4 on Single density ISIS II floppy
iUP-201A 212B	Off-Line and on-line PROM programmer with iPPS rel 1.4 on Double density ISIS II floppy
iUP-201A 213C	Off-Line and on-line PROM programmer with iPPS rel 2.0 for Series IV on mini-floppy
iUP-201A 216D	Off-Line and on-line PROM programmer with iPPS rel 2.0 for PC/DOS, and cable for PC or XT
iUP-201A 217D	Off-Line and on-line PROM programmer with iPPS rel 2.0 for PC/DOS, and cable for AT
iUP-200/201 U1* Upgrade Kit	Upgrades an iUP-200/201 universal programmer to an iUP-200A/201A universal programmer
iUP-PAK-A Upgrade Kit	Upgrades an iUP-200/A universal programmer to an iUP-201A universal programmer

*Most personality modules can be used only with an iUP-200A/201A universal programmer or an iUP-200/iUP201 universal programmer upgraded to an A with the iUP-200/iUP-201 U1 upgrade kit. If used in an iPDS, most personality modules require version 1.4 of the iPPS software.

Product Order Code	Description
iUP-PAK-A Upgrade Kit	Upgrades an iUP-200A universal programmer to an iUP-201A universal programmer

Software Sold Separately

Product Order Code	Description
211A	PROM programming software rel 1.4 on Single density ISIS II floppy
212B	PROM programming software rel 1.4 on Double density ISIS II floppy
213C	PROM programming software rel 2.0 for Series IV on mini-floppy
216D	PROM programming software rel 2.0 for PC/DOS with cable for PC or PC XT
217D	PROM programming software rel 2.0 for PC/DOS with cable for PC AT
219F	PROM programming software for iPDS on mini-floppy